09:41:28 OCA PAD AMENDMENT - PROJECT HEADER INFORMATION 03/20/92

Active

Project #: A-60-811 Cost share #: Rev #: 5
Center #: 10/31-6-S5125-0A0 Center shr #: OCA file #:
Work type : PUB SER
Contract#: 89P HC-45455B Mod #: 4 Document :
Prime #: Contract entity: GIT

Subprojects ? : N CFDA:
Main project #: PE #:

Project unit: NUCL. RES. Unit code: 03.010.466
Project director(s):
KARAM R A NUCL. RES. (404)894-3620

Sponsor/division names: TENN VALLEY AUTHORITY, TN /
Sponsor/division codes: 119 / 000

Award period: 890220 to 930219 (performance) 930219 (reports)

| Sponsor amount | New this change | Total to date |
|---|---|---|
| Contract value | 200,000.00 | 400,000.00 |
| Funded | 200,000.00 | 400,000.00 |
| Cost sharing amount | | 0.00 |

Does subcontracting plan apply ?: N

Title: HOT CELL SERVICES

PROJECT ADMINISTRATION DATA

OCA contact: Brian J. Lindberg 894-4820

| Sponsor technical contact | Sponsor issuing office |
|---|---|
| R.L. MORLEY | EDWARD E. LAWRENCE |
| ()- | (615)751-0011 |
| TENNESSEE VALLEY AUTHORITY | TENNESSEE VALLEY AUTHORITY |
| LA PSC 1-C | P.O. BOX 11127 |
| CHATTANOOGA, TENNESSEE 37402-2801 | CHATTANOOGA, TENNESSEE 37401-2127 |

Security class (U,C,S,TS) : U ONR resident rep. is ACO (Y/N): N
Defense priority rating : N/A N/A supplemental sheet
Equipment title vests with: Sponsor GIT
NONE PROPOSED OR ANTICIPATED.
Administrative comments -
CHANGE NO. 4 ADDS $200,000 IN NEW FUNDS. TOTAL FUNDING NOW: $400,000.

SR 1282

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION

NOTICE OF PROJECT CLOSEOUT

---

Closeout Notice Date 08/20/92
Original Closeout Started 01/31/91

Project No. A-60-811_____ Center No. 10/31-6-S5125-0A0_

Project Director KARAM R A_____ School/Lab NUCL. RES._____

Sponsor TENN VALLEY AUTHORITY, TN/_____

Contract/Grant No. 89P HC-45455B_____ Contract Entity GIT_

Prime Contract No. _____

Title HOT CELL SERVICES_____

Effective Completion Date 930219 (Performance) 930219 (Reports)

---

| Closeout Actions Required: | Y/N | Date Submitted |
|---|---|---|
| Final Invoice or Copy of Final Invoice | Y | _____ |
| Final Report of Inventions and/or Subcontracts | N | _____ |
| Government Property Inventory & Related Certificate | N | _____ |
| Classified Material Certificate | N | _____ |
| Release and Assignment | N | _____ |
| Other _____ | N | _____ |

Comments_____
_____

Subproject Under Main Project No. _____

Continues Project No. _____

Distribution Required:

| | |
|---|---|
| Project Director | Y |
| Administrative Network Representative | Y |
| GTRI Accounting/Grants and Contracts | Y |
| Procurement/Supply Services | Y |
| Research Property Managment | Y |
| Research Security Services | N |
| Reports Coordinator (OCA) | Y |
| GTRC | N |
| Project File | Y |
| Other _____ | N |
| _____ | N |

A-60-81


# Georgia Institute of Technology

NEELY NUCLEAR RESEARCH CENTER
900 ATLANTIC DRIVE
ATLANTA, GEORGIA 30332-0425

(404) 894-3


November 15, 1990

Tennessee Valley Authority
1101 Market Street
PSC 1E 20 B-C
Chattanooga, Tennessee 37402-2801

Attention: Ms. Cindy Rutledge

Client Reference: 89PHC-45455B
GT Reference : 020670

Gentlemen:

The items covered by the above number have been irradiated in accordance with quality assurance requirements using Cobalt 60 (gamma energies 1.173 Mev, 1.331 Mev) to the total dose requested.

We certify the specifics of the irradiation as follows:

| | |
|---|---|
| Irradiation Period: | Interval between 7-02-90 and 11-12-90 as shown on the enclosed Gamma Irradiation Log Sheets. |
| Dose Rate: | Not to exceed 1.0 E6 Rads/hr (Air Equivalent); maximum error plus or minus 4%. |
| Total Dose: | 55.0 E6 + 4% Rads (Air Equivalent); maximum error plus or minus 5%. |
| Dose Measurement: | Victoreen Model 500B-1 Integrating/Rate Electrometer System with ionization chamber probe. Calibration by Victoreen traceable to NBS Cobalt-60. |

Calculations and photographs of the arrangement are enclosed. Please let us know if any additional information is needed.

Yours truly,

Dr. B. K. Revsin,
Associate Director

BKR/arr

Enclosure (s)

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.010 | 1.026 | 60 | 53.25 | 2.65 E5 |
| 100 | 0.922 | 0.869 | 1.010 | 1.026 | 60 | 24.76 | 1.23 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 11-07-90
PROBE: 598

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.016 | 1.018 | 60 | 79.04 | 3.92 E5 |
| 100 | 0.922 | 0.869 | 1.016 | 1.018 | 60 | 37.74 | 1.87 E5 |
| 100 | 0.922 | 0.869 | 1.016 | 1.018 | 60 | 31.67 | 1.57 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 10-30-90
PROBE: 598

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.023 | 1.028 | 60 | 32.33 | 1.63 E5 |
| 100 | 0.922 | 0.869 | 1.023 | 1.028 | 60 | 79.73 | 4.03 E5 |
| 100 | 0.922 | 0.869 | 1.023 | 1.028 | 60 | 28.33 | 1.43 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 10-24-90
PROBE: 598

Prepared by: _ Date 11-16-90

Reviewed by: _ Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.016 | 1.028 | 60 | 86.31 | 4.33 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 10-22-90
PROBE: 598

Prepared by: Date 11-16-90

Reviewed by: Date 11/26/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.023 | 1.022 | 60 | 88.62 | 4.45 E5 |
| 100 | 0.922 | 0.869 | 1.023 | 1.022 | 60 | 32.59 | 1.63 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 10-17-90
PROBE: 598

Prepared by Date 11-16-90

Reviewed by Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.023 | 1.020 | 60 | 56.15 | 2.81 E5 |
| 100 | 0.922 | 0.869 | 1.023 | 1.020 | 60 | 55.07 | 2.76 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 10-16-90
PROBE: 598

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
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D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.020 | 1.031 | 60 | 86.88 | 4.39 E5 |
| 100 | 0.922 | 0.869 | 1.020 | 1.031 | 60 | 50.68 | 2.56 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 10-11-90
PROBE: 598

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.020 | 1.034 | 60 | 20.53 | 1.04 E5 |
| 100 | 0.922 | 0.869 | 1.020 | 1.034 | 60 | 117.78 | 5.97 E5 |
| 100 | 0.922 | 0.869 | 1.020 | 1.034 | 60 | 41.06 | 2.08 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 10-10-90
PROBE: 598

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.020 | 1.020 | 60 | 92.56 | 4.62 E5 |
| 100 | 0.922 | 0.869 | 1.020 | 1.020 | 60 | 40.96 | 2.04 E5 |
| 100 | 0.922 | 0.869 | 1.020 | 1.020 | 60 | 22.09 | 1.10 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 10-05-90
PROBE: 598

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.023 | 1.023 | 60 | 30.10 | 1.51 E5 |
| 100 | 0.922 | 0.869 | 1.023 | 1.023 | 60 | 10.46 | 5.26 E4 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 10-02-90
PROBE: 598

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.023 | 1.023 | 60 | 73.56 | 3.70 E5 |
| 100 | 0.922 | 0.869 | 1.023 | 1.023 | 60 | 65.84 | 3.31 E5 |
| 100 | 0.922 | 0.869 | 1.023 | 1.023 | 60 | 31.90 | 1.60 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 09-28-90
PROBE: 598

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.027 | 1.026 | 60 | 65.71 | 3.32 E5 |
| 100 | 0.922 | 0.869 | 1.027 | 1.026 | 60 | 59.15 | 2.99 E5 |
| 100 | 0.922 | 0.869 | 1.027 | 1.026 | 60 | 24.69 | 1.25 E5 |
| 100 | 0.922 | 0.869 | 1.027 | 1.026 | 60 | 15.93 | 8.06 E4 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 09-27-90
PROBE: 598

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.030 | 1.026 | 60 | 72.05 | 3.66 E5 |
| 100 | 0.922 | 0.869 | 1.030 | 1.026 | 60 | 65.93 | 3.34 E5 |
| 100 | 0.922 | 0.869 | 1.030 | 1.026 | 60 | 51.39 | 2.61 E5 |
| 100 | 0.922 | 0.869 | 1.030 | 1.026 | 60 | 40.27 | 2.04 E5 |
| 100 | 0.922 | 0.869 | 1.030 | 1.026 | 60 | 29.11 | 1.47 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 09-20-90
PROBE: 598

Prepared by: _____ Date 11-16-90

Reviewed by: _____ Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

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M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.027 | 1.020 | 60 | 96.82 | 4.87 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 09-18-90
PROBE:

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.030 | 1.027 | 60 | 80.23 | 4.07 E5 |
| 100 | 0.922 | 0.869 | 1.030 | 1.027 | 60 | 79.46 | 4.04 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 09-14-90
PROBE: 598

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

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T = Temperature Correction to 0 Degree Celsius
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H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.030 | 1.023 | 60 | 100.30 | 5.08 E5 |
| 100 | 0.922 | 0.869 | 1.030 | 1.023 | 60 | 44.62 | 2.26 E5 |
| 100 | 0.922 | 0.869 | 1.030 | 1.023 | 60 | 26.71 | 1.35 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 09-11-90
PROBE: 598

Prepared by: _____ Date 11-16-90

Reviewed by: _____ Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.033 | 1.028 | 60 | 112.13 | 5.72 E5 |
| 100 | 0.922 | 0.869 | 1.033 | 1.028 | 60 | 48.51 | 2.47 E5 |
| 100 | 0.922 | 0.869 | 1.030 | 1.028 | 60 | 31.12 | 1.58 E5 |
| 100 | 0.922 | 0.869 | 1.030 | 1.028 | 60 | 19.18 | 9.78 E4 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 09-07-90
PROBE: 598

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

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P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.033 | 1.019 | 60 | 116.25 | 5.88 E5 |
| 100 | 0.922 | 0.869 | 1.033 | 1.019 | 60 | 86.51 | 4.37 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 09-04-90
PROBE: 598

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.922 | 0.869 | 1.033 | 1.027 | 60 | 78.55 | 4.0 E5 |
| 100 | 0.922 | 0.869 | 1.033 | 1.027 | 60 | 49.26 | 2.51 E5 |
| 100 | 0.922 | 0.869 | 1.033 | 1.027 | 60 | 31.37 | 1.59 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 08-31-90
PROBE: 598

Prepared by: _ Date 11-16-90

Reviewed by: _ Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.943 | 0.869 | 1.037 | 1.031 | 60 | 77.25 | 4.06 E5 |
| 100 | 0.943 | 0.869 | 1.037 | 1.031 | 60 | 13.69 | 7.19 E4 |
| 100 | 0.943 | 0.869 | 1.037 | 1.031 | 60 | 12.72 | 6.68 E4 |
| 100 | 0.943 | 0.869 | 1.037 | 1.031 | 60 | 11.18 | 5.87 E4 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 08-23-90
PROBE: 593

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.943 | 0.869 | 1.030 | 1.025 | 60 | 65.32 | 3.39 E5 |
| 100 | 0.943 | 0.869 | 1.030 | 1.025 | 60 | 7.42 | 3.85 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.025 | 60 | 7.61 | 3.94 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.025 | 60 | 6.11 | 3.17 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.025 | 60 | 4.85 | 2.51 E4 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 08-17-90
PROBE: 593

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.943 | 0.869 | 1.030 | 1.025 | 60 | 191.33 | 9.93 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 08-16-90
PROBE: 593

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.943 | 0.869 | 1.027 | 1.027 | 60 | 44.87 | 2.32 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 08-15-90
PROBE: 593

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.943 | 0.869 | 1.030 | 1.029 | 60 | 11.66 | 6.07 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.029 | 60 | 9.41 | 4.90 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.029 | 60 | 7.52 | 3.91 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.029 | 60 | 5.44 | 2.83 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.029 | 60 | 3.69 | 1.92 E4 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 08-07-90
PROBE: 593

Prepared by: . Date 11-16-90

Reviewed by: . Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.943 | 0.869 | 1.030 | 1.025 | 60 | 7.94 | 4.12 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.025 | 60 | 6.32 | 3.28 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.025 | 60 | 4.82 | 2.50 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.025 | 60 | 2.84 | 1.47 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.025 | 60 | 15.59 | 8.09 E4 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 08-02-90
PROBE: 593

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.943 | 0.869 | 1.030 | 1.025 | 60 | 3.68 | 1.90 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.025 | 60 | 3.01 | 1.56 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.025 | 60 | 2.84 | 1.47 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.025 | 60 | 4.12 | 2.13 E4 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 08-01-90
PROBE: 593

Prepared by: _____ Date 11-16-90

Reviewed by: _____ Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.943 | 0.869 | 1.027 | 1.030 | 60 | 11.28 | 5.86 E4 |
| 100 | 0.943 | 0.869 | 1.027 | 1.030 | 60 | 9.66 | 5.02 E4 |
| 100 | 0.943 | 0.869 | 1.027 | 1.030 | 60 | 8.27 | 4.30 E4 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 07-31-90
PROBE: 593

Prepared by Date 11-16-90

Reviewed by Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.943 | 0.869 | 1.030 | 1.029 | 60 | 12.35 | 6.43 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.029 | 60 | 10.71 | 5.58 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.029 | 60 | 9.43 | 4.91 E4 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 07-23-90
PROBE: 593

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.943 | 0.869 | 1.030 | 1.023 | 60 | 17.60 | 9.11 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.023 | 60 | 46.23 | 2.39 E5 |
| 100 | 0.943 | 0.869 | 1.030 | 1.023 | 60 | 57.09 | 2.95 E5 |
| 100 | 0.943 | 0.869 | 1.030 | 1.023 | 60 | 52.22 | 2.70 E5 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 07-20-90
593

Prepared by: _____ ate 11-16-90

Reviewed by: _____ ate 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.943 | 0.869 | 1.030 | 1.027 | 60 | 49.61 | 2.58 E5 |
| 100 | 0.943 | 0.869 | 1.030 | 1.027 | 60 | 10.16 | 5.28 E4 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 07-20-90
PROBE: 593

Prepared by: Date 11-16-90

Reviewed by: Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.943 | 0.869 | 1.030 | 1.021 | 60 | 107.82 | 5.57 E5 |
| 100 | 0.943 | 0.869 | 1.030 | 1.021 | 60 | 3.22 | 1.66 E4 |
| 100 | 0.943 | 0.869 | 1.030 | 1.021 | 60 | 2.69 | 1.39 E4 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 07-16-90
PROBE: 593

Prepared by: _____ Date 11-16-90

Reviewed by: _____ Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.943 | 0.869 | 1.037 | 1.025 | 60 | 82.54 | 4.31 E5 |
| 100 | 0.943 | 0.869 | 1.037 | 1.025 | 60 | 3.30 | 1.72 E4 |
| 100 | 0.943 | 0.869 | 1.037 | 1.025 | 60 | 1.19 | 6.21 E3 |
| 100 | 0.943 | 0.869 | 1.037 | 1.025 | 60 | 0.49 | 2.56 E3 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 07-11-90
PROBE: 593

Prepared by: _____ Date 11-16-90

Reviewed by: _____ Date 11/20/90

## DOSE RATE DETERMINATION

E x P x D x T x M x H x R = Dose Rate, Rads/hr (Air Equivalent)

E = Electrometer High Level Conversion
P = Probe Efficiency
D = Dose Conversion, Roentgen to Rad
T = Temperature Correction to 0 Degree Celsius
M = Pressure Correction to 760 Millimeters Mercury
H = Time Conversion, Minutes to Hours
R = Electrometer Reading

| E | P | D | T | M | H | R | Dose Rate, Rads/hr |
|---|---|---|---|---|---|---|---|
| 100 | 0.943 | 0.869 | 1.037 | 1.027 | 60 | 169.89 | 8.89 E5 |
| 100 | 0.943 | 0.869 | 1.037 | 1.027 | 60 | 55.80 | 2.92 E5 |
| 100 | 0.943 | 0.869 | 1.037 | 1.027 | 60 | 5.03 | 2.63 E4 |
| 100 | 0.943 | 0.869 | 1.037 | 1.027 | 60 | 2.98 | 1.56 E4 |
| 100 | 0.943 | 0.869 | 1.037 | 1.027 | 60 | 2.09 | 1.09 E4 |

CLIENT REFERENCE: 89 PHC-45455B
GEORGIA TECH NUMBER: 020670
DATE: 07-10-90
PROBE: 593

Prepared by: _ Date 11-16-90

Reviewed by: _ Date 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : #89-0409-02F
Total Dose: 5.5 E7 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 7-02-90 1618 | 7-02-90 1655 | 0.61 | 3.54 E5 | 2.15 E5 | 2.15 E5 |
| 7-02-90 1655 | 7-03-90 1049 | 17.90 | 4.81 E5 | 8.60 E6 | 8.81 E6 |
| 7-03-90 1049 | 7-03-90 1449 | 4.0 | 6.34 E5 | 2.53 E6 | 1.13 E7 |
| 7-03-90 1449 | 7-05-90 1528 | 48.65 | 9.46 E5 | 4.60 E7 | 5.73 E7 |
| 7-20-90 1143 | 7-20-90 1557 | 4.23 | 2.95 E5 | 1.24 E6 | 5.85 E7 |
| 7-20-90 1658 | 7-23-90 1008 | 65.16 | 5.28 E4 | 3.44 E6 | 6.19 E7 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : #89-0409-02T
Total Dose: 5.5 E7 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 7-10-90 1933 | 7-11-90 1115 | 15.7 | 2.92 E5 | 4.58 E6 | 4.58 E6 |
| 7-11-90 1115 | 7-16-90 1327 | 122.20 | 4.31 E5 | 52.66 E6 | 57.24 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : #89-0409-16S
Total Dose: 2.38 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 7-10-90 1933 | 7-11-90 1115 | 15.7 | 2.63 E4 | 4.12 E5 | 4.12 E5 |
| 7-11-90 1115 | 7-16-90 1327 | 122.2 | 1.72 E4 | 2.10 E6 | 2.51 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : #89-0409-05S
Total Dose: 2.38 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 7-10-90 1933 | 7-11-90 1115 | 15.7 | 1.09 E4 | 1.71 E5 | 1.71 E5 |
| 7-11-90 1115 | 7-16-90 1327 | 122.2 | 2.56 E3 | 3.12 E5 | 4.83 E5 |
| 7-16-90 1627 | 7-19-90 1507 | 70.67 | 1.39 E4 | 9.82 E5 | 1.46 E6 |
| 7-20-90 1143 | 7-20-90 1557 | 4.23 | 2.39 E5 | 1.01 E6 | 2.47 E6 |

Prepared by:

Date: 7-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : #89-0409-12S
Total Dose: 2.38 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 7-10-90 1933 | 7-11-90 1115 | 15.70 | 1.56 E4 | 2.44 E5 | 2.44 E5 |
| 7-11-90 1115 | 7-16-90 1327 | 122.20 | 6.21 E3 | 7.58 E5 | 1.00 E6 |
| 7-16-90 1627 | 7-19-90 1507 | 70.67 | 1.66 E4 | 1.17 E6 | 2.17 E6 |
| 7-20-90 1143 | 7-20-90 1501 | 3.30 | 9.11 E4 | 3.00 E5 | 2.47 E6 |

Prepared by:

Date: 7-16-90

Reviewed by:

Date: 11/20/90

# GAMMA IRRADIATION LOG

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #03T
Total Dose: 55 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 8-01-90 1640 | 8-02-90 1304 | 20.4 | 2.13 E4 | 4.34 E5 | 4.34 E5 |
| 8-02-90 1414 | 8-06-90 0914 | 91.0 | 4.12 E4 | 3.74 E6 | 4.17 E6 |
| 8-07-90 1618 | 8-13-90 1230 | 140.2 | 4.90 E4 | 6.86 E6 | 11.03 E6 |
| 8-17-90 1625 | 8-23-90 0849 | 136.4 | 3.39 E5 | 46.24 E6 | 57.27 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# GAMMA IRRADIATION LOG

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #03F
Total Dose: 55 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 8-02-90 1414 | 8-06-90 0914 | 91.0 | 8.09 E4 | 7.36 E6 | 7.36 E6 |
| 8-07-90 1618 | 8-13-90 1230 | 140.2 | 6.07 E4 | 8.51 E6 | 15.87 E6 |
| 8-17-90 1625 | 8-23-90 0849 | 136.4 | 3.85 E4 | 5.25 E6 | 21.12 E6 |
| ?-23-90 1609 | 8-27-90 0909 | 89.0 | 4.06 E5 | 36.13 E6 | 57.25 E6 |

Prepared by: C

Date: 11-16-90

Reviewed by: /

Date: 11/20/90

# GAMMA IRRADIATION LOG

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #15S
Total Dose: 3.60 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 8-15-90 1659 | 8-16-90 0908 | 16.15 | 2.32 E5 | 3.74 E6 | 3.74 E6 |

Prepared by:

Date: 8-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #03S
Total Dose: 3.60 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 8-16-90 0953 | 8-16-90 1339 | 3.77 | 9.93 E5 | 3.74 E6 | 3.74 E6 |

Prepared by:

Date: 8-16-90

Reviewed by:

Date: 11/20/90

# GAMMA IRRADIATION LOG

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #06F
Total Dose: 55.0 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 9-07-90 1126 | 9-11-90 1532 | 100.1 | 5.72 E5 | 57.25 E6 | 57.25 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #06T
Total Dose: 55.0 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 9-07-90 1126 | 9-11-90 1532 | 100.1 | 2.47 E5 | 24.72 E6 | 24.72 E6 |
| 9-11-90 1646 | 9-14-90 0846 | 64.0 | 5.08 E5 | 32.51 E6 | 57.23 E6 |

Prepared by:

Date:

Reviewed by: /

Date: 11/20/90

-16-90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : #89-0409-12T
Total Dose: 5.5 E7 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 7-16-90 1627 | 7-19-90 1507 | 70.67 | 5.57 E5 | 3.93 E7 | 3.93 E7 |
| 7-20-90 1143 | 7-20-90 1557 | 4.23 | 2.70 E5 | 1.14 E6 | 4.04 E7 |
| 7-20-90 1658 | 7-23-90 1008 | 65.16 | 2.58 E5 | 1.68 E7 | 5.72 E7 |

Prepared by:

Date: 1-16-90

Reviewed by: /

Date: 11/20/90

# GAMMA IRRADIATION LOG

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #04T
Total Dose: 55.0 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 7-23-90 1622 | 7-31-90 0830 | 184.13 | 5.58 E4 | 1.02 E7 | 1.02 E7 |
| 7-31-90 1556 | 8-01-90 0956 | 18.0 | 5.02 E4 | 9.03 E5 | 1.11 E7 |
| 8-01-90 1640 | 8-02-90 1304 | 20.4 | 1.56 E4 | 3.18 E5 | 1.14 E7 |
| 8-02-90 1414 | 8-06-90 0914 | 91.0 | 2.50 E4 | 2.27 E6 | 13.67 E6 |
| 8-07-90 1618 | 8-13-90 1230 | 140.2 | 2.83 E4 | 3.96 E6 | 17.63 E6 |
| 8-17-90 1625 | 8-23-90 0849 | 136.4 | 3.17 E4 | 4.32 E6 | 21.95 E6 |
| 8-23-90 1609 | 8-27-90 0909 | 89.0 | 6.68 E4 | 5.94 E6 | 27.89 E6 |
| 8-31-90 1639 | 9-04-90 0839 | 88.0 | 2.51 E5 | 22.08 E6 | 49.97 E6 |
| 9-04-90 1537 | 9-05-90 0837 | 17.0 | 4.37 E5 | 7.42 E6 | 57.39 E6 |

Prepared by:

Date: 11-16-90

Reviewed by: J

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #04F
Total Dose: 55.0 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 7-23-90 1622 | 7-31-90 0830 | 184.13 | 6.43 E4 | 1.18 E7 | 1.18 E7 |
| 7-31-90 1556 | 8-01-90 0956 | 18.0 | 5.86 E4 | 1.05 E6 | 1.28 E7 |
| 8-01-90 1640 | 8-02-90 1304 | 20.4 | 1.90 E4 | 3.87 E5 | 1.31 E7 |
| 8-02-90 1414 | 8-06-90 0914 | 91.0 | 3.28 E4 | 2.98 E6 | 1.60 E7 |
| 8-07-90 1618 | 8-13-90 1230 | 140.2 | 3.91 E4 | 5.48 E6 | 21.48 E6 |
| 8-17-90 1625 | 8-23-90 0849 | 136.4 | 3.94 E4 | 5.37 E6 | 26.85 E6 |
| 8-23-90 1609 | 8-27-90 0909 | 89.0 | 7.19 E4 | 6.39 E6 | 33.24 E6 |
| 8-31-90 1639 | 9-04-90 0839 | 88.0 | 1.59 E5 | 1.399E7 | 47.23 E6 |
| 9-04-90 1537 | 9-05-90 0837 | 17.0 | 5.88 E5 | 9.99 E6 | 57.22 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #12F
Total Dose: 55.0 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 7-23-90 1622 | 7-31-90 0830 | 184.13 | 4.91 E4 | 9.04 E6 | 9.04 E6 |
| 7-31-90 1556 | 8-01-90 0956 | 18.0 | 4.30 E4 | 7.74 E5 | 9.81 E6 |
| 8-01-90 1640 | 8-02-90 1304 | 20.4 | 1.47 E4 | 2.99 E5 | 1.01 E7 |
| ?-02-90 1414 | 8-06-90 0914 | 91.0 | 1.47 E4 | 1.33 E6 | 11.43 E6 |
| 8-07-90 1618 | 8-13-90 1230 | 140.2 | 1.92 E4 | 2.69 E6 | 14.12 E6 |
| 8-17-90 1625 | 8-23-90 0849 | 136.4 | 2.51 E4 | 3.42 E6 | 17.54 E6 |
| 8-23-90 1609 | 8-27-90 0909 | 89.0 | 5.87 E4 | 5.22 E6 | 22.76 E6 |
| 8-31-90 1639 | 9-04-90 0839 | 88.0 | 4.0 E5 | 35.20 E6 | 57.96 E6 |

Prepared by:

Date: 9-16-90

Reviewed by:

Date: 11/20/90

# GAMMA IRRADIATION LOG

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #08F
Total Dose: 55.0 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 9-07-90 1126 | 9-11-90 1532 | 100.1 | 1.58 E5 | 15.81 E6 | 15.81 E6 |
| 9-11-90 1646 | 9-14-90 0846 | 64.0 | 2.26 E5 | 14.46 E6 | 30.27 E6 |
| 9-14-90 1409 | 9-17-90 0827 | 66.3 | 4.07 E5 | 26.98 E6 | 57.25 E6 |

Prepared by:

Date: 1-16-90

Reviewed by: [signature]

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #08T
Total Dose: 55.0 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 9-07-90 1126 | 9-11-90 1532 | 100.1 | 9.78 E4 | 9.78 E6 | 9.78 E6 |
| 9-11-90 1646 | 9-14-90 0846 | 64.0 | 1.35 E5 | 8.64 E6 | 18.42 E6 |
| 9-14-90 1409 | 9-17-90 0827 | 66.3 | 4.04 E5 | 26.78 E6 | 45.20 E6 |
| 9-18-90 1542 | 9-19-90 1627 | 24.75 | 4.87 E5 | 12.05 E6 | 57.25 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #18T
Total Dose: 55.0 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 9-20-90 1834 | 9-27-90 0804 | 157.5 | 3.66 E5 | 57.64 E6 | 57.64 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# GAMMA IRRADIATION LOG

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #17F
Total Dose: 55.0 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 9-20-90 1834 | 9-27-90 0804 | 157.5 | 3.34 E5 | 52.60 E6 | 52.60 E6 |
| 9-27-90 1625 | 9-28-90 0907 | 16.7 | 2.99 E5 | 4.99 E6 | 57.59 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #19F
Total Dose: 55.0 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 9-20-90 1834 | 9-27-90 0804 | 157.5 | 2.04 E5 | 32.13 E6 | 32.13 E6 |
| 9-27-90 1625 | 9-28-90 0907 | 16.7 | 8.06 E4 | 1.34 E6 | 33.47 E6 |
| 9-28-90 1520 | 10-01-90 0820 | 65.0 | 3.70 E5 | 24.05 E6 | 57.52 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #05F
Total Dose: 55.0 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 9-20-90 1834 | 9-27-90 0804 | 157.5 | 1.47 E5 | 23.15 E6 | 23.15 E6 |
| 9-27-90 1625 | 9-28-90 0907 | 16.7 | 3.32 E5 | 5.54 E6 | 28.69 E6 |
| 9-28-90 1520 | 10-01-90 0820 | 65.0 | 3.31 E5 | 21.51 E6 | 50.20 E6 |
| 10-1-90 1701 | 10-02-90 0901 | 16.0 | 2.0 E5 | 3.20 E6 | 53.40 E6 |
| 10-2-90 0915 | 10-03-90 0925 | 24.16 | 1.51 E5 | 3.64 E6 | 57.04 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #18F
Total Dose: 55.0 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 9-20-90 1834 | 9-27-90 0804 | 157.5 | 2.61 E5 | 41.10 E6 | 41.10 E6 |
| 9-27-90 1625 | 9-28-90 0907 | 16.7 | 1.25 E5 | 2.08 E6 | 43.18 E6 |
| 9-28-90 1520 | 10-01-90 0820 | 65.0 | 1.60 E5 | 10.40 E6 | 53.58 E6 |
| 10-1-90 1701 | 10-02-90 0901 | 16.0 | 1.46 E5 | 2.33 E6 | 55.91 E6 |
| 10-2-90 0915 | 10-03-90 0925 | 24.16 | 5.26 E4 | 1.27 E6 | 57.18 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #17T
Total Dose: 55.0 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 10-5-90 1606 | 10-10-90 1606 | 120.0 | 4.62 E5 | 55.44 E6 | 55.44 E6 |
| 10-10-90 1606 | 10-11-90 0906 | 17.0 | 1.04 E5 | 1.76 E6 | 57.20 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #05T
Total Dose: 55.0 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 10-5-90 1606 | 10-10-90 1606 | 120.0 | 2.04 E5 | 24.48 E6 | 24.48 E6 |
| 10-10-90 1606 | 10-11-90 0906 | 17.0 | 5.97 E5 | 10.14 E6 | 34.62 E6 |
| 10-11-90 1349 | 10-15-90 1000 | 92.18 | 2.56 E5 | 23.59 E6 | 58.21 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# GAMMA IRRADIATION LOG

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on Tray #19T
Total Dose: 55.0 E6 Rads +4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 10-5-90 1606 | 10-10-90 1606 | 120.0 | 1.10 E5 | 13.20 E6 | 13.20 E6 |
| 10-10-90 1606 | 10-11-90 0906 | 17.0 | 2.08 E5 | 3.53 E6 | 16.73 E6 |
| 10-11-90 1349 | 10-15-90 1000 | 92.18 | 4.39 E5 | 40.46 E6 | 57.19 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on tray 20T
Total Dose: 55.0 E6 Rads + 4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 10-16-90 1556 | 10-17-90 1456 | 23.0 | 2.81 E5 | 6.46 E6 | 6.46 E6 |
| 10-17-90 1456 | 10-22-90 0856 | 114.0 | 4.45 E5 | 50.73 E6 | 57.19 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on tray 20F
Total Dose: 55.0 E6 Rads + 4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 10-16-90 1556 | 10-17-90 1456 | 23.0 | 2.76 E5 | 6.34 E6 | 6.34 E6 |
| 10-17-90 1456 | 10-22-90 0856 | 114.0 | 1.63 E5 | 18.58 E6 | 24.92 E6 |
| 10-22-90 1120 | 10-23-90 0830 | 21.16 | 4.33 E5 | 9.16 E6 | 34.08 E6 |
| 10-24-90 1645 | 10-30-90 1440 | 141.91 | 1.63 E5 | 23.13 E6 | 57.21 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on tray 15T
Total Dose: 55.0 E6 Rads + 4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 10-24-90 1645 | 10-30-90 1440 | 141.91 | 4.03 E5 | 57.19 E6 | 57.19 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# GAMMA IRRADIATION LOG

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on tray 15F
Total Dose: 55.0 E6 Rads + 4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 10-24-90 1645 | 10-30-90 1440 | 141.91 | 1.43 E5 | 20.29 E6 | 20.29 E6 |
| 10-30-90 1541 | 11-05-90 1736 | 145.92 | 1.57 E5 | 22.90 E6 | 43.19 E6 |
| 11-07-90 1625 | 11-12-90 0925 | 113.0 | 1.23 E5 | 13.89 E6 | 57.08 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on tray 16F
Total Dose: 55.0 E6 Rads + 4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 10-30-90 1541 | 11-05-90 1736 | 145.92 | 3.92 E5 | 57.20 E6 | 57.20 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

# G A M M A  I R R A D I A T I O N  L O G

Client : TVA
P.O. Number: 89PHC-45455B
NNRC Ref : 020670

Item : Cable on tray 16T
Total Dose: 55.0 E6 Rads + 4%
Dose Rate : NTE 1.0 E6 Rads/hr.

| Irradiation Time Start | Irradiation Time Stop | Elapsed Hrs. | Dose Rate Rad/hr. | Dose Rads | Total Dose Rads |
|---|---|---|---|---|---|
| 10-30-90 1541 | 11-05-90 1736 | 145.92 | 1.87 E5 | 27.28 E6 | 27.28 E6 |
| 11-07-90 1625 | 11-12-90 0925 | 113.0 | 2.65 E5 | 29.94 E6 | 57.22 E6 |

Prepared by:

Date: 11-16-90

Reviewed by:

Date: 11/20/90

**CERTIFICATE OF CALIBRATION**

July 10, 1990

Manufacturer: VICTOREEN
Model: 500B-1
Description: ELECTROMETER
Serial No.: 340
Calibrated By: B. D. Statham
Neely Nuclear Research Center
Georgia Instituteof Technology
Atlanta, GA 30332
Calibration Due 7/10/91 ± 25%

This Certificate attests that this instrument has been calibrated with standards traceable to the National Institute of Standards and Technology.

**STANDARDS USED IN CALIBRATION8**

Keithley Picoampere Source, Model No. 261, SN 71987
Calibrated: August 8, 1989 Due August 8, 1990 ± 25%
Vendor: General Electric Co.
Integrated Communication Services Operation
2825-A Pacific Drive
Norcross, GA 30071
GE Traceability:
FLU-8506A Number 4350012 (Next Cal Due 8/29/89)
NIST Test No. DCV 234784, ACV 238764, OHM 240543
NIST Test No. AC Ratio 233211
FUI-6500 Number 57,023 (Next Cal Due 8/29/89)
NIST Test No. PET-570 OHMS, PET-600

Hewlett Packard Digital Voltmeter, Model 412A, SN 31609668
Calibrated: June 29, 1990 Due June 29, 1991 ± 25%
Vendor: General Electric Co.
Address: As above

Hewlett Packard Digital Voltmeter, Model 412A, SN31609668
Calibrated: July 26, 1990 Due July 26, 1991 ± 25%
Vendor: American Electronic Laboratory
1355 Bluegrass Parkway
Alphareta, GA 30201-7700
NIST Numbers:
AC Volts - 521/240585
Resistance - 244770
DC Volts - 244770

**CERTIFICATE OF CALIBRATION**

March 22, 1990

| | |
|---|---|
| Manufacturer: | VICTOREEN PROBE |
| Model: | 550-6A |
| Description: | Probe |
| Serial No.: | 593 |
| Calibrated By: | Victoreen, Inc.<br>6000 Cochran Road<br>Cleveland, Ohio 44139-3395 |
| | Calibration Due 3/22/91 ± 25% |

Victoreen, Inc. Traceability

| | |
|---|---|
| Test Number: | DG 8953/89 |
| Calibration: | February 8, 1989 |
| PTW Chamber Model: | 30-349 |
| Serial Number: | 610 |

**CERTIFICATE OF CALIBRATION**

August 28, 1990

| | |
|---|---|
| Manufacturer: | VICTOREEN PROBE |
| Model: | 550-6A |
| Description: | Probe |
| Serial No.: | 598 |
| Calibrated By: | Victoreen, Inc.<br>6000 Cochran Road<br>Cleveland, Ohio 44139-3395 |
| | Calibration Due 8/28/91 ± 25% |

Victoreen, Inc. Traceability

| | |
|---|---|
| Test Number: | DG 8953/89 |
| Calibration: | February 8, 1989 |
| PTW Chamber Model: | 30-349 |
| Serial Number: | 610 |

# CERTIFICATE OF CALIBRATION

April 25, 1989

Manufacturer: VICTOREEN
Model: 500B-1
Description: ELECTROMETER
Serial No.: 340
Calibrated By: B. D. Statham
Neely Nuclear Research Center
Georgia Instituteof Technology
Atlanta, GA 30332
Calibration Due 4/25/90 ± 25%

This Certificate attests that this instrument has been calibrated with standards traceable to the National Institute of Standards and Technology.

## STANDARDS USED IN CALIBRATION8

Keithley Picoampere Source, Model No. 261, SN 71987
Calibrated: August 8, 1988 Due August 8, 1989 ± 25%
Vendor: General Electric Co.
Integrated Communication Services Operation
2825-A Pacific Drive
Norcross, GA 30071
GE Traceability:
FLU-8506A Number 4350012 (Next Cal Due 8/26/88)
NIST Test No. DCV 234784, ACV 238764, OHM 238767
FUI-6500 Number 57,023 (Next Cal Due 8/20/88)
NIST Test No. PET-570 OHMS, PET-600 DCV
SLN-7081 Number 000480 (Next Cal Due 10/11/88)
NIST Test No. DCV 234784, ACV 238764, OHM 238767

Hewlett Packard Digital Voltmeter, Model 412A, SN 31609668
Calibrated: February 13, 1989 Due February 13, 1990
Vendor: General Electric Co.
Address: As above
GE Traceability:
FLU-5101B Number 2705012 (Next Cal Due 7/5/89)
NIST Test No. DC-234784, VAC-238764, OHM-238767, FREQ.-WWVB
BID-726349 Number 96533 (Next Cal Due 5/21/89)
NIST Test No. OHM-238767
GR-1433Y Number 28836 (Next Cal Due 3/10/89)
NIST Test No. 238767

# CERTIFICATE OF CALIBRATION

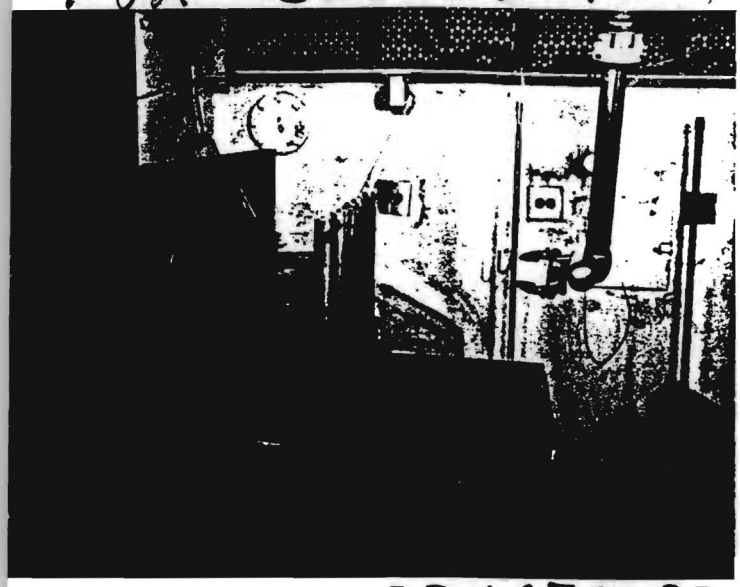
March 15, 1989

| | |
|---|---|
| Manufacturer: | VICTOREEN PROBE |
| Model: | 550-6A |
| Description: | Probe |
| Serial No.: | 586 |
| Calibrated By: | Victoreen, Inc.<br>6000 Cochran Road<br>Cleveland, Ohio 44139-3395 |
| | Calibration Due 3/15/90 ± 25% |

Victoreen, Inc. Traceability

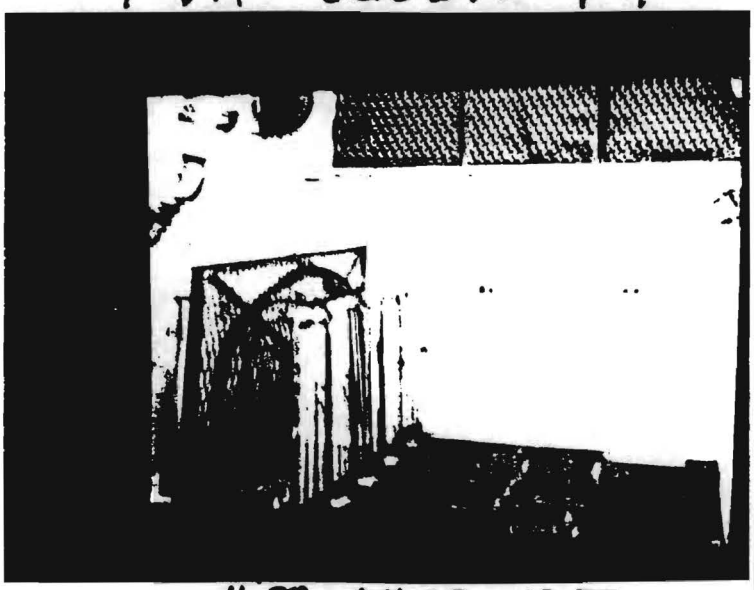
| | |
|---|---|
| Test Number: | DG 8118/83 |
| Calibration: | September 29, 1983 |
| PTW Chamber Model: | 30-343 |
| Serial Number: | N23361-142 |

TVA ~~020670-P2~~



020670-P2

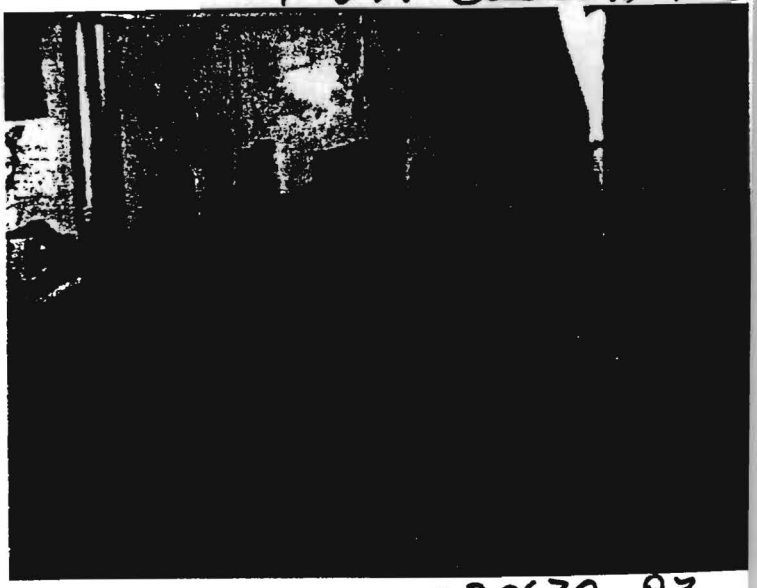
TVA 020670-P4



#89-0409-12T

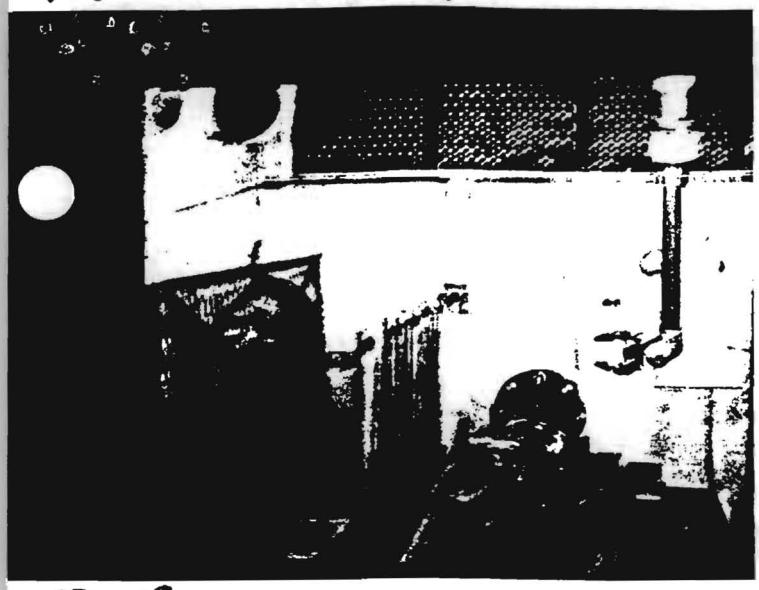
TVA 020670-P1

TVA ~~020670-P3~~



020670-P3

TVA 020670-P7



12T ↗

TVA 020670 P-10

8-1-90 \ 04F \ 04T \ 12F

020670 - P6 05-S TVA

12-T 3 02-F 3 12-S 3

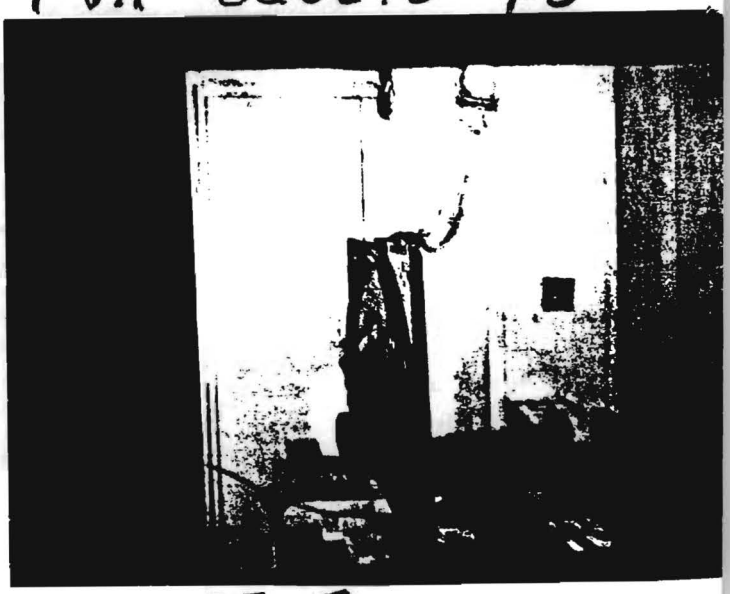
TVA 020670 - P9

7-31-90 ↖ 04F ↖ 04T ← 12F

TVA 020670-P5

89-0409-125 ↗ ← 89-0409-@5S

TVA 020670-P8



02F ↗

TVA # 020670 P-13

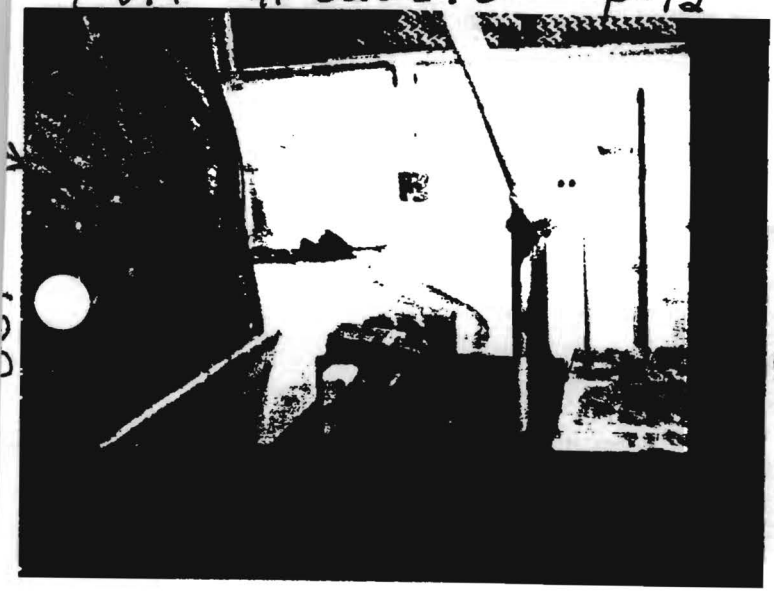
03T ↗ ↖04F 04T ↖ 12F

TVA P-16

8-16-90

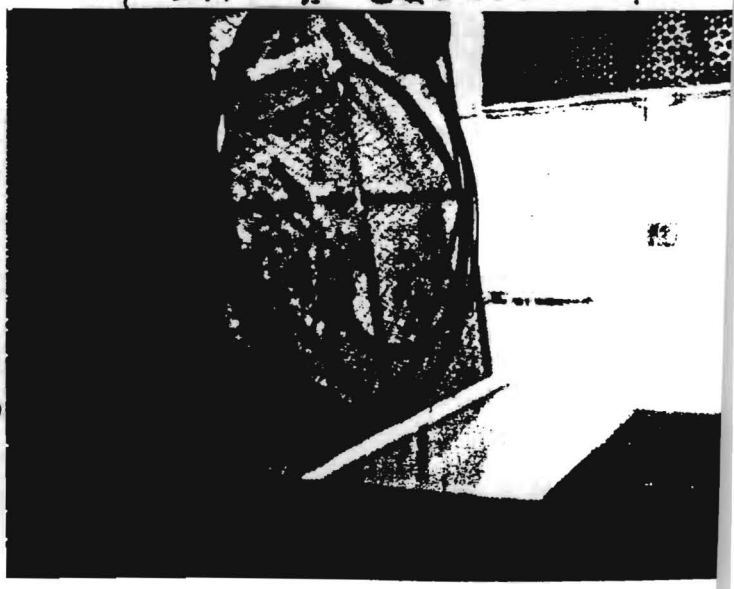
035 & 15-5 SET-UP

TVA # 020670 P-12



8-2-90

TVA # 020670 P-15



8-13-90

03F

TVA # 020670 P-11

08-1-8
8-13-90

TVA # 020670 P-14

03T 04F 04T 12F

TVA # 020670 P-19

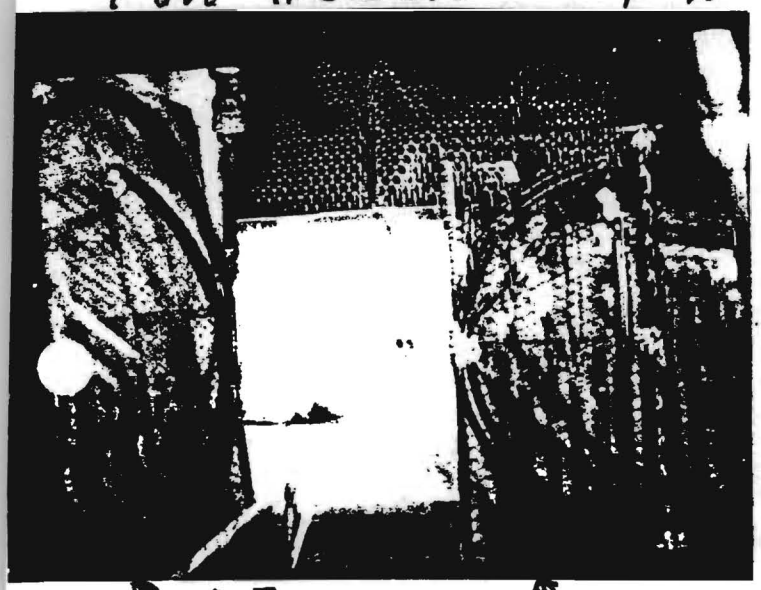
04F 04T 12F

TVA # 020670 P-22

8-31-90

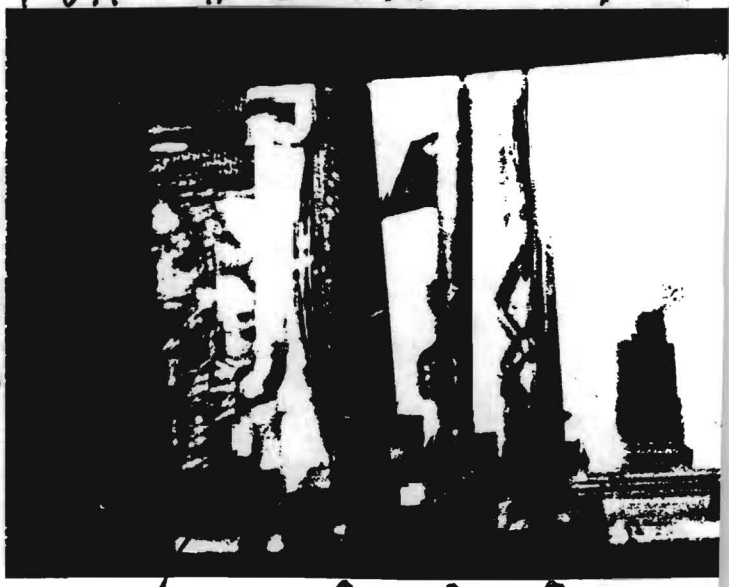
12F 04T 04F

TVA #020670 P-18



03F 03T

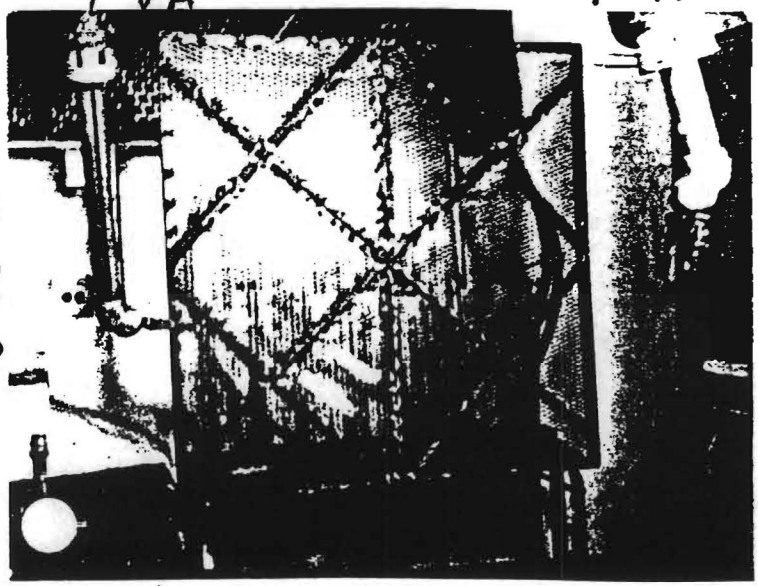
TVA # 020670 P-21



8-23-90

03F 04F 04T 12F

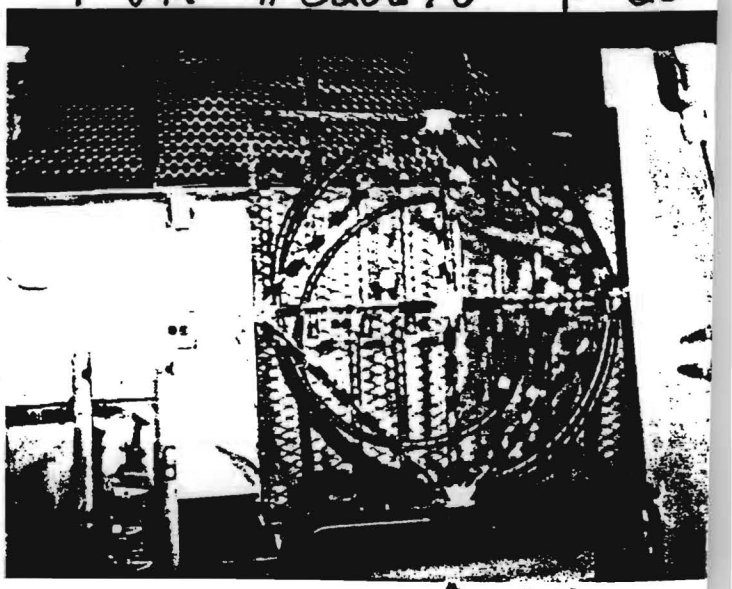
TVA P-17



8-31-90

Cable/Tray # 15-S

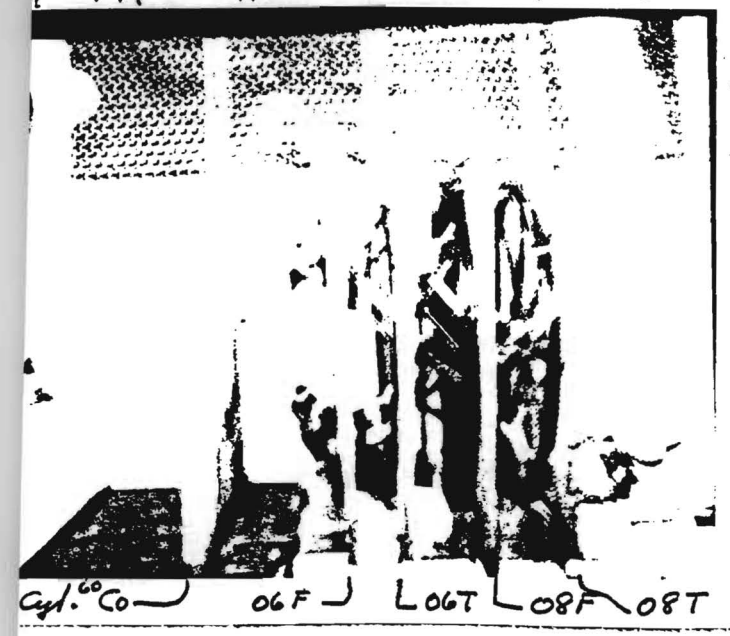
TVA #020670 P-20



8-23-90

03F

TVA # 020670 P-24

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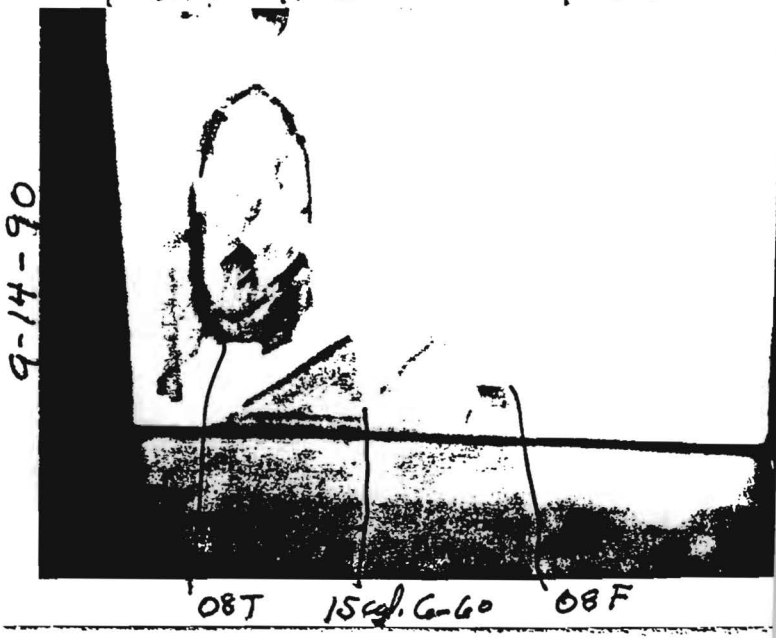


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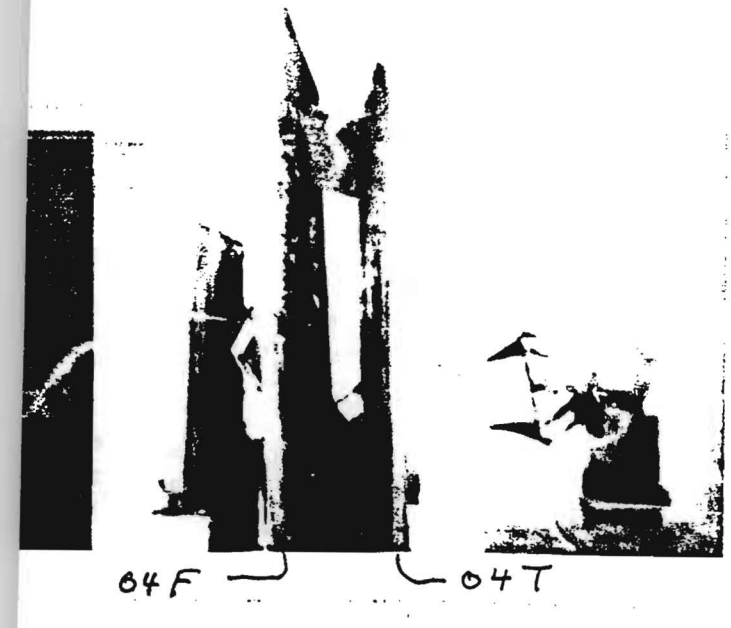
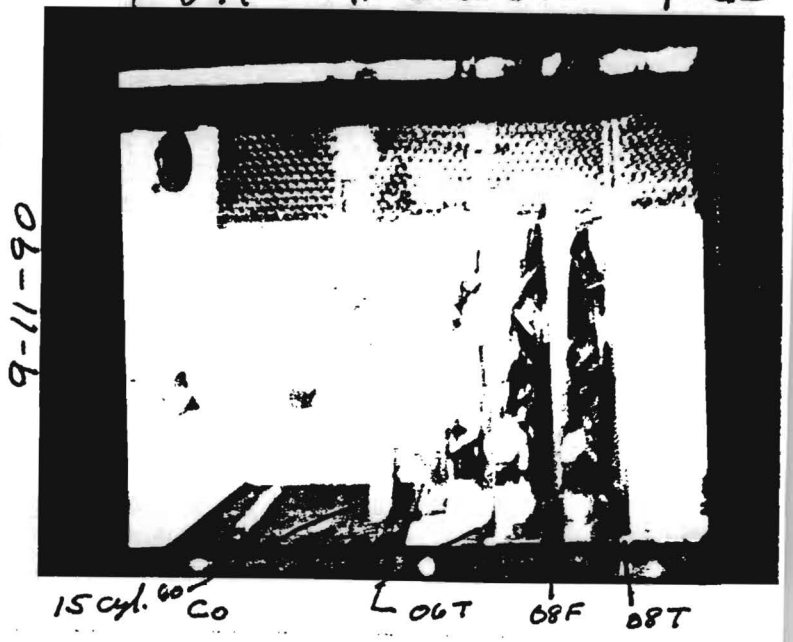
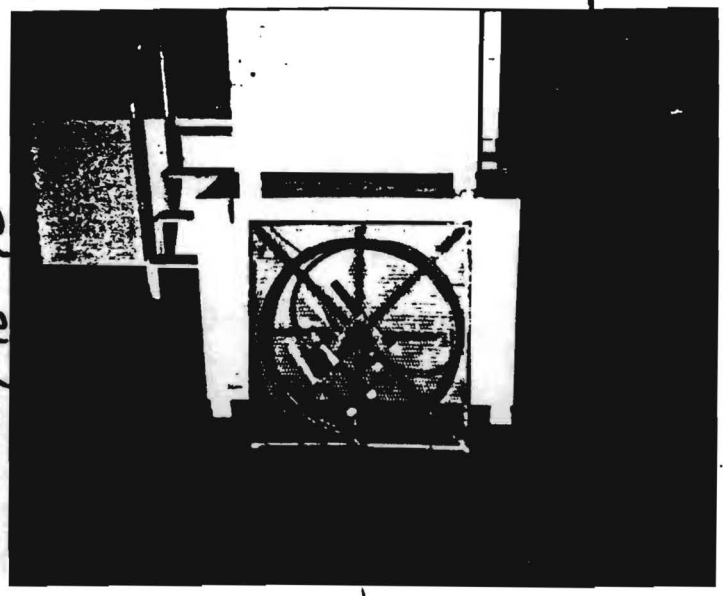



TVA # 020670 P-25



TVA #020670 P-27



9-18-90

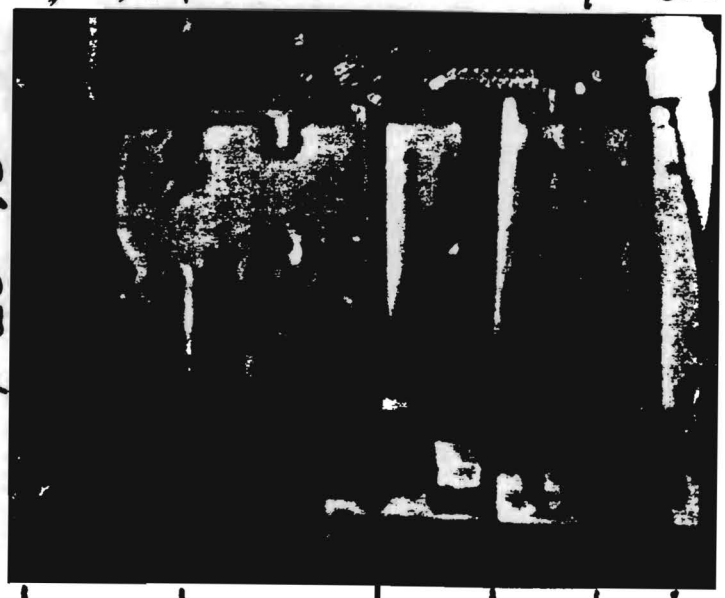
08T Completed

TVA #020670 P-29

15T 15F

15 cyl. Co-60

TVA #020670 P-28



9-20-90

18T 17F 18F 19F 05F

15 cyl. Co-60